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Pilot Trial of Evidence-Based Integrative Group Therapy to Improve Executive Functioning among Adults: Implications for Community Mental Health and Training Clinics

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***Abstract*—**Objective: Executive functioning (EF) deficits underlie several mental health diagnoses including ADHD, anxiety, and depression. Community mental health clinics face extensive waitlists for services with many referrals involving EF deficits. A pilot trial of a four-week group therapy was developed using key components from Cognitive-Behavioral Therapy (CBT), Dialectical Behavior Therapy (DBT), and mindfulness with an aim to improve EF skills and offer low-fee services. Method: Eight adults (M = 34.5) waiting for services at a community clinic were enrolled in a four-week group therapy at an in-house training clinic for doctoral trainees. Baseline EF, pre-/post-intervention ADHD and distress symptoms, group satisfaction, and curriculum helpfulness were assessed. Results: Downward trends in ADHD and distress symptoms pre/post-intervention were not significant. Favorable responses on group satisfaction and helpfulness suggest clinical utility. Conclusion: Preliminary pilot data from a brief group therapy to improve EF may be an efficacious, acceptable, and feasible intervention for adults waiting for services at community mental health and training clinics where there are high demands and limits to services and staffs.

***Keywords*—**Executive functioning, cognitive-behavioral therapy, dialectical behavior therapy, mindfulness, adult group therapy.

I. Introduction

THE shortage of mental health professionals remains a current challenge in the United States [1], particularly among training clinics and community mental health clinics with sliding scale and low-fee services where the demand for mental health services is greater than can be provided, resulting in waitlists of several months [2], [3]. Referrals for treatment or assessment services for Attention-Deficit/ Hyperactivity Disorder (ADHD) are most common in these settings, particularly among college counseling centers [4]-[6]. Frequently, those referred for services for ADHD require psychoeducation around the exact diagnostic components of the disorder as their symptoms are often better accounted for by a different diagnosis altogether.

Specifically, difficulties with EF, or higher-order cognitive processes used to regulate cognitions, behaviors, and emotions, cut across several mental health diagnoses including ADHD, anxiety, depression, and substance use disorders [7], [8]. Treatment focusing on the underlying challenges that may exacerbate diagnostic comorbidity, such as EF deficits, may save clients time and money as well as clinic resources. Primary interventions to treat ADHD typically consist of a combination of medication and behavioral modification and demonstrate predominantly positive results [9], [10]. In addition, there are several other treatment modalities that have empirically demonstrated effectiveness in improving EF and ADHD symptoms.

Principles of CBT, DBT, and mindfulness can translate into skill building to increase one's EF strengths and buffer EF deficits. CBT-based interventions aimed at improving EF deficits have demonstrated efficacy in targeting key ADHD symptoms such as poor emotional control, self-monitoring, inattention, hyperactivity, and task monitoring [11]-[14]. Moreover, mindfulness-based interventions, also a key component of DBT, can specifically target executive dysfunction. A summary of several randomized controlled trials of integrative body-mind training found improvements in attentional control, emotion regulation, and responses to stress [15]. An additional mindfulness training intervention found improvements in EF and reductions in attentional and behavioral challenges among adolescents with ADHD [16]. Group delivery of these treatment components has also shown promise as an effective treatment modality for EF deficits and ADHD. A weekly, six-session CBT skills group for adults with ADHD demonstrated significantly greater improvement in one's knowledge of ADHD, self-efficacy, and self-esteem than a control group [17]. Another study found a 14-session DBT group therapy intervention that utilized skills such as emotion regulation and mindfulness, significantly reduced ADHD symptoms in Swedish adults [18]. These studies suggest that brief, group interventions that integrate CBT (i.e., cognitive restructuring), DBT (i.e., emotion regulation), and mindfulness may be beneficial for adults with EF deficits or ADHD who may not otherwise have access to individual services or medication.

In the context of frequent referrals for services for ADHD and extensive waitlists at community mental health clinics and training clinics, group delivery of a brief, integrated therapy aimed to improve EF among adults merits consideration. Previous delivery of group therapy treatments by clinical psychology graduate students, such as DBT group skills

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training [19] and cognitive training [20], have demonstrated effectiveness in improving EF skills. The current study aimed to integrate CBT, DBT, and mindfulness components into a pilot trial of an evidence-based four-week group therapy for adults of various ages with referrals related to EF in an in-house training clinic for a clinical psychology doctoral program. The intervention would serve as an affordable service to the community, a more efficient treatment for individuals seeking services, and a valuable group therapy training experience for doctoral students in psychology. It was hypothesized that (1) there would be a decrease in ADHD symptoms and (2) a decrease in clinical psychological distress pre- and post-intervention.

II. Methods

A. Participants

The Meltzer Center for Psychological and Community-based services is an in-house training clinic for doctoral students in the Clinical/Community Psychology Program at the George Washington University. The Center offers a variety of low-cost psychological services to community members in the Washington, D.C. metro area. Generally, individuals who are interested in receiving services undergo a phone screen to assure that they are a good fit for the training clinic before being added to a waitlist for either therapy or psychoeducational assessments. For this study, adults on the waitlist were informed about the executive function group (EF group) to offer them the opportunity to receive a brief intervention while waiting for openings for other psychological services. In addition, emails and flyers regarding this group were distributed to all the in-house clinicians as well as other local community clinics so they could discuss this opportunity with their therapy and assessment clients.

In total, nine clients participated in the intervention. Eligible participants reported referral questions that included psychoeducational testing for ADHD and learning disabilities, as well as short-term therapy for ADHD, depression, and anxiety. Participation in the EF group was voluntary, and any adults who were interested were eligible to participate. Depending on their age, clients were assigned to either the young adult group or the adult group, although exceptions were made depending on their preferences and availabilities. Overall, five participated in the young adult group and four participated in the adult group. Among both groups, about 78% were female, 56% were African American/Black, 22% were White, and 56% had an annual income of below $25,000. For the young adult group, the mean age was 28.60 (*SD* = 9.40), three were students, and 80% of the clients attended all four sessions. One individual decided to not participate in the final session. For the adult group, the mean age was 40.25 (*SD* = 15.90), two clients were students, and 75% of the clients attended all four sessions. One individual missed the second and third session.

B. Measures

Baseline EF

The Behavior Rating Inventory of Executive Function-Adult Version (BRIEF-A) [21], [22] is a 75-item self-report scale that assesses levels of EF difficulties in everyday settings within the past month, using a three-point Likert scale, ranging from one (*Never*) to three (*Often*). The measure consists of the following three composite scores, derived from subscales: Behavioral Regulation Index (BRI), Metacognition Index (MI), and Global Executive Composite (GEC). The BRI index examines one's ability to effectively regulate and monitor behaviors and emotional responses. The MI index assesses one's ability to initiate activities, sustain working memory, plan and organize materials and daily activities, and monitor problem solving. The GEC incorporates all the domains from the BRI and the MI indices. The BRIEF-A has excellent reliability among adults with Cronbach's alphas ranging from 0.73 to 0.90 [22]. It was administered at the beginning of the first session to measure one's baseline EF deficits and results were returned in the second session to deepen client's self-awareness of their strengths and weaknesses relative to same-age peers.

Attention and Hyperactivity/ Impulsivity

The Adult ADHD Self-Report Scale (ASRS Screener), developed by the World Health Organization [23], [24], is a six-item self-report scale that measures difficulties associated with attention and hyperactivity/impulsivity within the past six months, using a six-point Likert scale, ranging from one (*Never*) to six (*Very Often*). A score higher than 14 suggests a positive screen for ADHD. Among adults, it has demonstrated high reliability with Cronbach's alphas around 0.80 across clinical and normative populations [25]. The ASRS Screener was administered at the beginning of the first and the last sessions.

General Functioning

The Brief Adjustment Scale-6, Weekly Version (BASE-6 Weekly) [26] is a six-item self-report questionnaire that examines one's overall psychological distress and functioning within the past week, using a seven-point Likert scale, ranging from one (*Not at all*) to seven (*Extremely*). An example question is "To what extent have you felt unhappy, discouraged, and/or depressed this week?" A score higher than 19 suggests clinical impairment. Among college students and adults, the BASE-6 has demonstrated high reliability with Cronbach's alphas ranging from 0.87 to 0.93 [26]. It was administered at the beginning of each session to track group members' weekly psychological functioning.

Group Treatment Satisfaction

The Group Satisfaction Scale (GSS) [27] is a 12-item questionnaire to assess one's satisfaction with the group treatment they received, using a five-point Likert scale, ranging from one (*Completely False; Poor*) to five (*Completely True*; *Excellent*), in addition to one closed-ended question to see if they would recommend this group to others.

Example items are "The facilitator(s) cared about me as a person" and "I learned what I was hoping to learn." Four items were used to compute a score for the satisfaction with therapist subscale (e.g., warmth, empathy) and six items were used to compute a score for the content/group process subscale (e.g., group cohesion, emotional expressiveness). For each of these subscales, as well as the total score, a mean item response was computed across participants. A percentage was calculated by aggregating each participant's score for that subscale and dividing by the total possible number of points to determine a satisfaction rate. The GSS was administered at the end of the last session.

Curriculum Helpfulness

An 11-item questionnaire was created to assess curriculum helpfulness. For each component of the modules (e.g., understanding how EF affects our life; practicing mindfulness in the session; homework), participants rated how helpful it was on a scale of zero to 10 (10 = *Most Helpful*). Responses were averaged for each item and a total mean item response was computed across participants. Qualitative feedback for future improvement was gathered as well. The questionnaire was administered at the end of the last session.

C. EF Group Program Development

The EF group modules were informed by previous literature demonstrating the effectiveness of mindfulness, CBT, and DBT in the treatment of EF deficits [11], [14], [16], [19], [28], [29]. The four-week format, module content, and module organization were developed as a team with consultants including a neuropsychologist. The team was comprised of doctoral clinical psychology students, bachelor-level clinic interns, and the clinic director, a licensed clinical psychologist.

There were four modules, each focused on a different topic (manual available by request to corresponding author). The first module was Understanding EF and EF Helpers which included psychoeducation about EF and the manifestations of challenges with EF. The second module was Mindfulness and EF which focused on mindfulness practice, mindful living, wise mind, and what/how skills. The third module was Introduction to CBT which included CBT psychoeducation on the CBT model, cognitive restructuring, and distress tolerance. The fourth module was Putting it All Together which reviewed skills and applied the skills in EF tasks. Weekly homework was incorporated into the intervention to create accountability for practicing the skills learned in session. A point system was developed to incentivize the completion of homework and contributions in session. Namely, participants earned points for the group that counted towards resources for the celebratory event during final session (i.e., catered food, beverages, dessert, art supplies, board games, etc.). To engender a sense of agency and autonomy in our participants, we entrusted them with the planning and execution of the event provided that they accumulated a sufficient number of points for preparedness and contribution during the intervention.

D. EF Group Program Delivery

Two separate groups were delivered based on the age of the participants with one group for young adults and another group for adults. There were no changes to module content or organization between the two groups, though delivery style and use of examples were adapted appropriately (i.e., examples in context of academic concerns for young adults and examples in the context of workplace or interpersonal concerns for early/middle-aged adults). Each group consisted of four, 90-minute sessions delivered once a week, facilitated by two student clinicians enrolled in a doctoral program in clinical psychology. There were a total of three co-facilitators across the two groups, with one facilitator delivering both groups. A lead/co-lead training model was developed such that an advanced student was lead facilitator in the first iteration with one novice student co-leading who then became the leader for the second iteration with another novice student operating as co-lead. One facilitator was an Asian female, aged late 20s, another was a White male, aged early 20s, and the last facilitator was an Asian-American female, aged mid-20s. The facilitators were supervised by the clinic director, a licensed psychologist with extensive training in DBT and CBT as well as experience treating EF deficits.

III. Results

Pre- and post-intervention analysis was performed using a paired samples *t*-test. All analyses were based on participants who completed both the pre and post measures (n = 8). Given the exploratory and short-term nature of our study, the results should be taken with caution.

A. Baseline Executive Function

The BRIEF-A assessment was used to assess the baseline presence of executive dysfunction (Clinical Range = 65 and above). 62.5% of participants fell at or above the Clinical Range for GEC suggesting some baseline difficulty in one or more areas of EF (M = 65.13; SD = 9.34; range = 30; median = 69). 25% of participants fell at or above the Clinical Range for BRI implying slight difficulty in emotion and behavior regulation (M = 58.88, SD = 7.30, range = 20, median = 59.5). Further, 75% of participants scored at or above the Clinical Range for MI demonstrating difficulties with initiation, working memory, planning, organizing, and/or the ability to monitor task-oriented problem solving (M = 68.25, SD = 10.98, range = 35, median = 71). Table I summarizes individual BRI, MI, and GEC scores for each participant.

B. Clinical Measures

Participant pre- and post-intervention scores for all measures can be found in Table II. 75% of participants had lower BASE-6 scores post-intervention than pre-intervention and 75% of participants had lower or equal ASRS scores post-intervention than pre-intervention. However, a paired samples *t*-test indicated that there was no significant difference in pre-intervention BASE-6 scores (M = 25.25, SD = 5.50) and post-intervention BASE-6 scores (M = 22.89, SD = 7.45; t(7) = -1.51, p = 0.174). Moreover, a paired samples *t*-test indicated

that there was no significant difference in pre-intervention ASRS scores (M = 14.75, SD = 6.41) and post-intervention ASRS scores (M = 12.5, SD = 4.34; t(7) = -1.23, p = 0.259).

TABLE I
BASELINE BRIEF-A SCORES (N = 8)

Participant	GEC	BRI	MI
1	70	63	74
2	60	50	67
3	69	60	73
4	69	67	69
5	70	59	76
6	47	48	46
7	59	56	60
8	77	68	81
Mean	65.13	58.88	68.25
SD	9.34	7.30	10.98
% Above Clinical Range (65+)	62.5%	25%	75%

Note: Baseline BRIEF-A scores across both iterations of EF group.

TABLE II
BASE-6 AND ASRS SCORES FOR PRE- AND POST-TREATMENT (N = 8)

	BASE-6		ASRS	
Participant	Pre	Post	Pre	Post
1	19	13	19	11
2	22	15	20	9
3	27	25	20	16
4	23	24	15	15
5	36	34	14	13
6	22	28	2	7
7	23	16	9	9
8	30	28	19	20
Mean	25.25	22.89	14.75	12.5
SD	5.50	7.45	6.41	4.34
Paired *t* test	t	p	t	p
	-1.51	0.174	-1.23	0.259

Note: BASE-6 and ASRS scores pre- and post-treatment across both iterations of EF group.

TABLE III
GROUP SATISFACTION AND CURRICULUM HELPFULNESS (N = 7)

GSS		
Subscale	Mean	Satisfaction Rate
Satisfaction with Therapist	4.68	94%
Content/Group Process	4.04	88%
Total	4.40	88%
Curriculum Helpfulness Scale		
Module Components	Mean	SD
Intro to EF	9	1.91
Assessing EF Strengths	8.86	1.21
Impact of EF on Life	9.17	1.33
Learning about Mindfulness	8.67	1.63
Practicing Mindfulness	9.33	0.82
Distress Tolerance	8.67	1.51
Impact of Thoughts on EF	9.33	0.82
Labeling Cognitive Distortions	9.33	1.21
Learning to Manage Thoughts	8.67	1.86
Homework	8.71	1.50
Total	7.94	1.32

Note: Group Satisfaction and Curriculum Helpfulness ratings across both iterations of EF group.

C. Group Satisfaction and Curriculum Helpfulness

All analyses for group satisfaction were based on the participants who completed the post surveys (n = 7). On the GSS five-point scale, the mean response on the therapist satisfaction subscale was 4.68 with a 94% satisfaction rate. On the content and group process subscale, the mean response was as 4.04 with an 88% satisfaction rate. The mean item response across the GSS was 4.40 with an 88% satisfaction rate. Results on the curriculum helpfulness questionnaire varied by module components. More popular module components, on a 10-point Likert scale, included practicing mindfulness (M = 9.33, SD = 0.82), discussing the impacts of thoughts on EF (M = 9.33, SD = 0.82), and labeling cognitive distortions (M = 9.33, SD = 1.21). The overall mean item response across the module components was 7.94. Descriptive statistics for group treatment satisfaction and curriculum helpfulness can be found in Table III.

IV. ISCUSSION

We hypothesized that our manualized evidence-based four-week group therapy would decrease ADHD symptoms and decrease clinical psychological distress. Although we observed downward trends in symptomatology between administration of measures pre- and post-intervention in the majority of our sample, it is important to note that there was no significant difference in the ASRS scores or the BASE-6 scores between these two points in time. These results did not differ when performed separately for the young adult and adult group. Additional results indicated that the EF group was well-received as evidenced by participant's positive reports on the GSS and the curriculum helpfulness questionnaire. These findings encouragingly imply a substantial level of client-perceived clinical utility and efficacy in raising one's psychoeducation around EF.

Our four-week group therapy addressed executive dysfunction in young adult and adult populations unlike its similar predecessors that mainly focused on children and adolescents. Similar to a study by Bettis et al., we used a short-term group intervention leveraging our clinical psychology in-house training clinic to promote EF and build skills to manage and improve challenges with EF, while also addressing the community's need for low-fee mental health services [20]. We advocate for popularization of this group's short-term model, as it has potential to serve as an affordable service to the community as well as valuable training experience for clinical psychology doctoral students. Furthermore, we used an integrative approach, drawing from several theoretical orientations and techniques, including psychoeducation, CBT, DBT, and mindfulness. We find that it might be valuable to consult several orientations and to draw from empirically effective techniques of each (including modeling, role-plays, didactic instruction, homework, mindfulness, monitoring, and positive reinforcement) to address executive dysfunction in undergraduate and graduate students, as well as adults who may be struggling in the workforce. To facilitate the development and delivery of

similar models, we created a manual for wider dissemination and use. The manual includes session-by-session breakdown of activities, didactic material, worksheets, and instructions for facilitator preparation; the manual can be obtained online (manual available by request to corresponding author).

Another prominent feature of our four-week group therapy is incorporating positive reinforcement each time a team member completes their homework and participates in session. This strategy served as: a) positive reinforcement for participation and learning, b) reinforcement of group collaboration, and c) practical utilization of EF skills taught and practiced during the intervention. Although the point system was rated lower on the curriculum helpfulness questionnaire relative to other components of the treatment, it was still favorable and could be further refined to continue to engage group members. We hope to see this strategy expanded by similar studies in the future.

This study is not without its limitations. First, although our sample was ethnically and racially diverse, it was comprised of merely eight individuals, which limits the degree to which the results can generalize to other young adults and adults. Second, we lacked a control group, which limits conclusions on causality even if the sample was larger and results were significant. Third, our intervention's selection criteria were merely tantamount to the clinic's client eligibility criteria (i.e., no untreated psychosis). Therefore, any participant meeting these criteria could participate, which creates the possibility for symptom heterogeneity and comorbidities that would be more challenging to treat in an intervention targeting solely EF skills. Lastly, the intervention was administered by clinicians in training who had limited group therapy experience, which may have impacted treatment outcomes.

In order to better understand effective group interventions for EF and address the aforementioned limitations, future studies could implement a larger sample size to better capture a range of baseline EF and better generalize the findings. Also, a waitlist control group would contribute to building a stronger causality argument and address ethical shortcomings of withholding treatment in standard no-treatment controls. Additional considerations include either longer sessions (i.e., two hours) or more sessions with additional modules (i.e., workplace EF, interpersonal EF skills). This would allow for more data points with pre- and post-tests of EF and psychological distress symptoms to better assess changes in symptomology and knowledge gained as well as evaluate retention of skills over time.

Our evidence-based four-week group therapy aimed to address executive dysfunction in young adults and adults yielded inconclusive results about change in ADHD symptoms and clinical psychological distress, though downward trends in symptomology were observed. Additional findings from group satisfaction and curriculum helpfulness demonstrated a moderately high level of client-perceived clinical utility. We drew from multiple empirically supported techniques from CBT, DBT, and mindfulness approaches and employed other behavioral strategies such as a positive reinforcement strategy for participation and learning, group collaboration, and practical utilization of content taught and practiced during the intervention. Alongside these strategies, we hope to see the model of combining affordable community mental health services with training experiences for clinical psychology students to address the extensive waitlists in mental health clinics and the shortage of mental health providers. Avenues for implementation of this model include college counseling centers, understaffed clinics with long treatment and assessment waitlists, or stepped-care models in which peer support is one level of a multi-layered intervention.

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